

TRANSITION

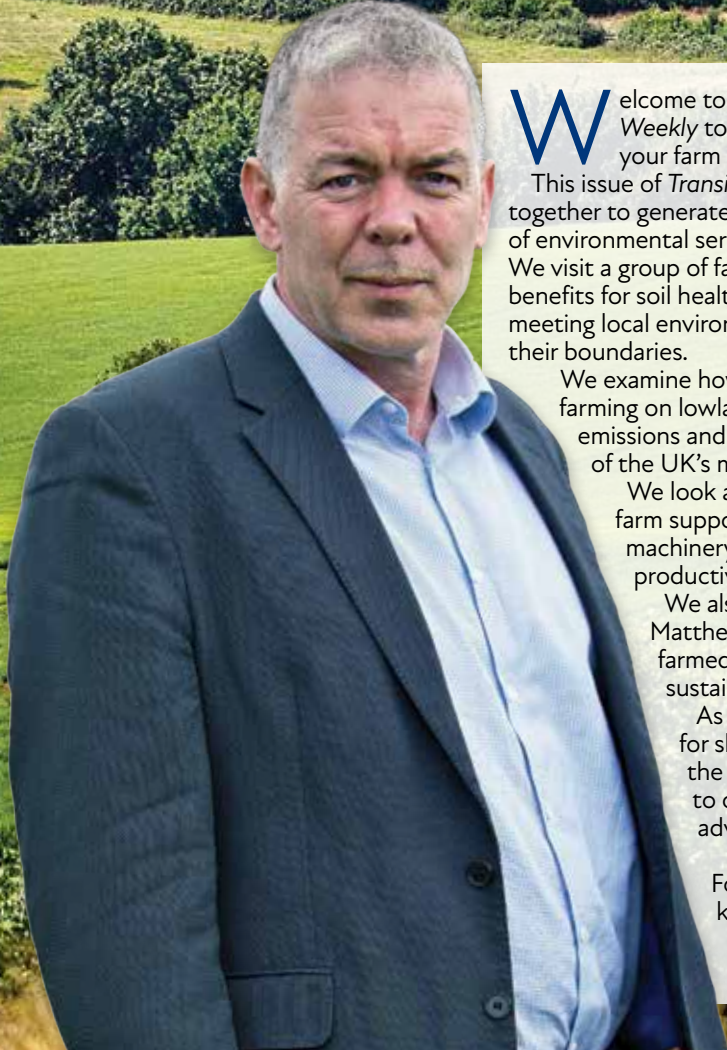
Securing a sustainable future for your farm business



BOOM TIME

How new-entrant farmer built an 1,100ha business

Join forces for a better farming future



Welcome to *Transition* – the quarterly supplement from *Farmers Weekly* to help secure a sustainable future for your farm business.

This issue of *Transition* highlights ways British farmers are working together to generate much-needed extra income while providing a host of environmental services alongside their core job of food production. We visit a group of farmers who have joined forces to deliver bigger benefits for soil health, water quality and wildlife at a landscape scale – meeting local environmental priorities both on their own land and beyond their boundaries.

We examine how fenland farmers are finding ways to continue farming on lowland peat soils while reducing greenhouse gas emissions and meeting stringent climate change targets in one of the UK's most productive agricultural areas.

We look at how farmers are meeting the challenge of changes in farm support, the pitfalls to avoid when deciding on new farming machinery, and how one dairy farming family is ramping up productivity by changing their herd management strategy.

We also meet our new *Transition Farmer* – arable grower Matthew Williams, who manages 1,100ha of rented or contract-farmed land, a situation that has brought profitability, sustainability and input cost control into sharp focus.

As always, we are grateful to all our *Transition Farmers* for sharing their stories as they adapt their businesses for the new environmental schemes. We are equally grateful to our *Transition Partners*, for sharing their expertise and advice along the way.

For more about our *Transition* initiative, visit our knowledge hub at fwi.co.uk/transition

Johann Tasker, *Transition* editor

OUR PARTNERS

The *Farmers Weekly* *Transition* Partner Network is a UK-wide community of farmers, industry stakeholders and influencers working together to secure a



MAIN PHOTO: RICHARD STANTON

CONTENT HIGHLIGHTS



How Fenland farmers are cutting greenhouse gases from peat

See p11



The role of collaboration in delivering landscape-scale change

See p20



The pitfalls of replacing farm machinery, and how to avoid them

See p24

sustainable future for UK agriculture. If you would like to join and want more information, contact Anna Eccleston at anna.eccleston@markallengroup.com



JOHN DEERE

LINKING ENVIRONMENT AND FARMING

LLOYDS BANK



Autumn Reseeds Will Improve Unproductive Swards

Grassland impacted by dry periods can be rejuvenated by an autumn reseed to maximise production ahead of next season

Replacing unproductive swards with modern grass varieties this autumn will increase returns from grassland, avoid carrying too many underperforming fields, and reduce the risk of running short on forage or grazing supplies.

Janet Montgomery, agriculture product manager for leading grass seed breeder Barenbrug UK, says that growing modern varieties will increase a farm's fodder flow going into 2024 and make the farm more resilient to external factors, such as the weather and rising external costs.

"High input costs and dry summers may have prevented some farmers from carrying out planned reseeding works, which could subsequently cause grass quality to decline. However, autumn offers an ideal time to replace these tired and underperforming swards to increase key metrics next year.

"It is worth remembering that the grass seed won't be the most expensive part of the reseed, and growing the right varieties suited to your system will offer yield and quality increases, along with biodiversity improvements for many years," Janet explains. "A well-established reseed, with a simple multi-species

mix such as Barenbrug's Barmix, will outperform current swards for five years or more, helping to sustain your farm's resilience by maximising your grassland."

Extreme Weather Implications

Extended periods without rainfall can lower the amount of biomass produced by grassland and reduce long-term performance if pastures are severely affected. To help farmers plan and prioritise the areas in most need of work, Barenbrug's Grass Index categorises swards into one of five areas.

Swards at Index One are the most unproductive, featuring older varieties and plenty of gaps for weeds to grow, and low soil health. In contrast, Index Five will feature a well-maintained consistent grass crop, with high yielding sown species, such as perennial ryegrass, in addition to species such as chicory, clover and plantain, to increase biodiversity.

Janet continues: "There is no need to remove partly productive areas if there are other pastures at lower yield levels. By indexing fields, it helps to put reseeding into perspective and approach it in a manageable way. Assessing how swards have been impacted by the

weather extremes enables farmers to carry out remedial work to repair them back to full productivity."

Underperforming fields need to be addressed to avoid a reduction in a farm's fodder flow and make the whole system more resilient. Part of this could be introducing species, such as cocksfoot, that are able to withstand drought or waterlogging better thanks to their deeper rooting.

"Reseeding pastures is a multifactorial decision considering time, money, machinery availability and knowledge of key factors in the operation. However, in cases where swards are at an Index Two or lower, a greater cost to the farm business will be leaving unproductive swards to decline further. It is also worth remembering that a reseeded area will offer increased returns for several years, so the investment can be spread over this period," comments Janet.

Barmix – A Manageable Multi-species

A popular first mix for farmers exploring multi-species swards is Barenbrug's Barmix, which contains four grass species and an optional clover. Barmix offers increased biodiversity, whilst being

easy to manage and able to fit into most existing farming systems. Barmix has the right mix of species to allow strong performance in a variety of areas, as Janet explains.

"Barmix is a low input, high output mix for grassland farms, which offers the flexibility to graze or produce silage. It has some deep rooting species, such as cocksfoot and tall fescue, that are well adapted to wet conditions, while the perennial ryegrass element is shallow rooted and highly productive. Timothy provides high palatability and will increase consumption, and there's the option to add clover to aid nitrogen fixation and reduce fertiliser requirement."

Taking a field out of production this autumn doesn't mean it won't be able to contribute to the feedstocks next spring, and better-quality grassland will offer farms more versatility to turnout earlier or fatten livestock quicker, and ultimately improve returns from reseeded swards over the next several years.

To find out more

Call: +44 (0) 1359 272000

Email: info@barenbrug.co.uk

Visit:

www.barenbrug.co.uk/farming

Meet our Transition Farmers

These 16 farmers are sharing their journeys with us as they adapt their businesses

Karen Halton

Cheshire



P22

Farm size 240ha

Enterprises

530-cow dairy herd

Transition goals

- Recruit/retain staff
- Maintain animal health and welfare
- Increase direct sales

James MacCartney

Rutland



Farm size 162ha

Enterprises

Beef and sheep

Transition goals

- Reduce disease in sheep
- Be better than net zero
- Establish herbal leys

Vaughan Hodgson

Cumbria



P8

Farm size 244ha

Enterprises

Cereals, grassland, broilers

Transition goals

- Support the next generation
- Replace lost Basic Payment Scheme income
- Adapt to uncertain weather

Alan Steven

Fife



P7

Farm size 138ha

Enterprises

Potatoes, brussels sprouts, parsnips, malting barley

Transition goals

- Reduce cultivations
- Improve soil health
- More resilient rotations

Andrew McFadzean

Ayrshire



Farm size 285ha

Enterprises

350 beef cattle, wheat, beans, barley, fodder beet

Transition goals

- Slash finishing time
- Reduce dependence on inputs using solar energy
- Improve grassland

Rachel & Richard Risdon

Devon



Farm size 151ha

Enterprises

300-cow dairy herd

Transition goals

- Secure adequate labour
- Better understanding of Environmental Land Management
- Reduce carbon footprint

Kit Speakman

Essex



P27

Farm size 275ha

Enterprises

Mixed arable, beef and sheep

Transition goals

- Bridge income gap
- Fully diversified business
- Widen the rotation

Eddie Andrew

Sheffield



Farm size 73ha

Enterprises

Dairy, milk delivery service, ice cream parlour and farm shop

Transition goals

- Co-operating to reduce costs
- Establish a new dairy
- Reduce carbon footprint

Irwel Jones

Camarthenshire



Farm size 375ha

Enterprises

1,500 ewes on owned and rented land, suckler cows and followers, root crops

Transition goals

- Manage natural woodland
- Plant hedgerows
- Rely less on volatile inputs

Andy Bason

Hampshire



P28

Farm size 800ha

Enterprises

Cereals, spring beans, oats, linseed and oilseed rape

Transition goals

- Cut carbon emissions by 30%
- Establish 10ha of agroforestry
- Establish 10ha of woodland

Duncan Blyth

Norfolk



Farm size 2,650ha

Enterprises

Cereals, oilseed rape, sugar beet, pulses, grassland, woodland, wetlands

Transition goals

- Improve soil health
- Develop natural capital revenues
- Achieve net zero by 2030

Fergal Watson

County Down



Farm size 285ha across three units

Enterprises

170-cow suckler herd, beans, wheat, spring barley, oats

Transition goals

- Recruit/retain farm staff
- Restructure suckler herd
- Improve business resilience

Philip Vickers

County Durham



Farm size 1,250ha

Enterprises

Winter wheat, oilseed rape, spring barley, spring beans, lupins, rotational grass; share-farming agreement with tenant sheep farmer

Transition goals

- Maintain margins while changing approach
- Improve soil health and resilience
- Enhance natural environment

Kate and Vicky Morgan

East Yorkshire



Farm size 1,700 breeding sows

Enterprises

Weaning 1,000 pigs a week – finished on-site and through B&B arrangements with local farmers, 140ha rented out

Transition goals

- Facilitate structural change in supply chain
- Establish more influence over own destiny
- Diversify

Ed Shuldham

Wiltshire



P20

Farm size 1,800ha

Enterprises

Cereals, oilseed rape, oats, forage and grain maize, peas, solar, biomass, anaerobic digestion, events and property diversifications

Transition goals

- Help shape Sustainable Farming Incentive through participation in pilot
- Make more use of data
- Take natural capital

Matthew Williams

Shropshire



P16

Farm size 1,100ha

Enterprises

Cereals, oilseed rape, winter beans

Transition goals

- Improve profitability and margins
- Continue to improve soil health
- Control and optimise input use

Future farmer programme seeks 75 young farmers

Harper Adams University's School of Sustainable Food and Farming, sponsored by Tesco, will help fill the environment and sustainability skills gap in UK agriculture.

Farmers under 40 aren't what you'd call "early career". Indeed, if they've been through higher education, many will be celebrating nearly two decades of their farming careers. Some will have started earlier than that, of course, meaning they've amassed a wealth of knowledge along the way. Many haven't stopped (they can't in a time of finite resource, financial sustainability pressures and yield imperatives) to think about what the future of their own businesses might look like. Should they diversify further? Should they consider a change? What are they doing well already? What could be done better? Many have begun a journey to better understand how they can farm more sustainably.

But still the data tells us there's a skills gap among farmers under 40. We can't assume everybody knows the direction of travel. They need access to information after being inspired to act before they can make a plan of action. That's where a new programme developed by Harper Adams University's School of Sustainable Food and Farming in partnership with Tesco will help to fill the skills gap ready for the development of a plan for implementation.

The nine-month course, which will run for the next three years, will include face-to-face and live online tutorials and farmers in any agricultural sector are invited to apply. There will be on and offline events and mentoring sessions on business operations and personal development. There is no fee to participate but farmers must be under the age of 40.

Simon Thelwell, Strategic Director of the School of Sustainable Food and Farming explains:

"The programme is an exciting first for the industry. It will help farmers to identify sustainability strengths and weaknesses within their businesses, advance personal strengths and weaknesses and develop a roadmap for future success for future-proofing sustainable farming practices.

The first step will be to help farmers to measure sustainability, study test cases and examples from all over the world and consider success factors and pitfalls. The second step is about the individual farmer – how can they develop themselves, their skills and opportunities for learning. The third and final step is about knowing their business, including markets and performance, plan-

ning for change and measuring success.

"We are delighted to be working with Tesco to support the introduction of this programme which we're sure will bring a great deal of value to farmers who are motivated to take their farm business to the next level, securing a direction for the future of sustainable UK agriculture on the journey to net zero."

To apply for one of the 75 places on the programme (industry professionals are also eligible to apply), register your interest now. Please note these places are fully funded excluding travel or accommodation.

To find out more visit:

Harper.ac.uk/FFP



Survey reveals depth of policy and cost concerns

Input price volatility and uncertainty over government policy continue to hold back farmers looking to secure a sustainable future for their business, a major survey has revealed. **Jonathan Riley** reports

The third *Farmers Weekly Transition* survey – carried out by Macleod Research – provides a snapshot of the UK farming sector as it tackles post-Brexit challenges and opportunities.

The survey polled the opinions of more than 500 farmers across the UK in the spring of 2023. Farms of all types and sizes were represented and their views captured on issues like basic payments and government grant schemes.

Basic payments

The survey showed farmers across the UK continue to rely heavily on support scheme money, with almost 90% receiving some funding. However, the 10% of producers who went without a payment was double the 5% figure seen in 2022.

Responses from different age groups revealed that the under-45s were far less likely to receive a Basic Payment Scheme (BPS) payment. Of the younger group, one in six (17%) received no BPS support at all while only 5% of the over-45s were without a payment from the scheme.

On average, BPS revenue accounted for 29.3% of farm incomes in the 12 months up to spring 2023, only slightly down on the 31.7% recorded for the same period a year earlier. For more than two in five (41%), BPS money made up a quarter of incomes. But for 16%, BPS funding still accounted for three-quarters or more of total revenue, a slight increase on the figure for spring 2022 when it stood at 14%.

Future viability

Dwindling support levels continue to cause widespread concern. A growing number of farmers (49% – up from 45% last year) are now “very concerned” about how they will replace lost revenue from support. Overall, eight out of 10 farmers registered some level of concern.

Concerns ran so deeply that 87.5% said they were uncertain whether their farms would even survive without BPS support. More than half (55%) forecast it would be difficult to survive and a quarter went further, saying survival would only be secured with great difficulty.

Just 10% believed their survival would be achieved easily, down from 12% in the first survey two years ago. The number of farmers who thought the transition to no BPS would be very easy has halved from 4% in 2021 to just 2% in 2023. There was also a notable difference in optimism between age groups, with 24% of the under-44s believing it would be fairly easy to survive without the direct payment. Only 9% of older farmers shared that optimism.

Despite the level of concern, 30% of farmers in the UK are yet to start on the transition to life after BPS. Another 10% have only begun to make changes in the past six months. Both figures are unchanged from the previous survey.

There are key differences across the regions, with 76% of England’s farmers already making moves, up from 71% last year and 65% in the first annual survey. That contrasts with Scotland, where the government has been more vocal in its backing for farmers and pledged to continue providing support payments. This more positive approach is a possible driver for a much smaller proportion

TRANSITION FARMER: ALAN STEVEN

In Fife, arable grower Alan Steven voices his frustration with the Scottish government after receiving an update from NFU Scotland president Martin Kennedy that revealed difficulties in getting Green Party coalition members to “see sense and make progress on farming policy”.

He says farmers need to know the details of the Scottish government’s 10-year plan. But that is being held back because

policymakers north of the border are lacking information from Westminster on future budgets. “Food is still needed and we can grow quality produce, but we have to see a way forward to be able to encourage the next generation to follow on and be able to invest.”

Alan lists the cost of inflation and retail food prices as other major issues. “Supermarkets are trying to bring prices

down while we need them to stay up, as our costs are still high and rising,” he says.

● Alan Steven is one of our 16 Transition Farmers who are updating us as they adapt their business for life after BPS. Find out how you can follow his journey on p5



< of farmers (40%) who have embarked on transitioning to farming without support.

Costs, productivity and efficiency

Of the farm businesses that have begun making preparations, the largest proportion is eyeing an increase in production to make up for the lost support payments. Two in five (41%) saw ramping up output as the best way forward, although this proportion has declined slightly on last year's figure of 47%.

A similar proportion (39%) saw a new diversification as the way forward – close to the last survey's figure of 38%. More than one-third (37%) are looking to an off-farm revenue to bolster incomes.

Almost two-thirds already have a source of off-farm income, with 22% in outside employment while 19% own another business and 15% hold investments unrelated to agriculture.

The largest year-on-year changes in preparation are in reducing costs. Inflated equipment prices have seen the number of farmers identifying a change to their machinery strategy as a way forward rise from 25% in 2022 to 30% this spring. A drop in labour availability since Brexit was also a key factor in making changes.

One in five farmers (21%) are now looking to reduce staff, compared with 16% a year ago. Contracting out farm work to cut either labour or machinery costs also saw a marked increase as a policy from 11% of farms in 2022 to 17% in 2023. Despite the volatility seen in input costs and labour availability, the level of reported efficiency remains consistently high.

About 85% of farmers say their farms are run either fairly or very efficiently and that is a figure reported with little variation between England, (85%), Scotland (82%) and Wales (84%). Within the overall figure, a rising number believed their farms were running very efficiently at 18% com-

pared with 16% last year and 14% in the first year the survey was carried out.

Environmental measures

When asked what environmental measures farmers were interested in undertaking for financial reward, clean air and pollution prevention came out on top. For both pollution prevention and clean air, 70% said they would be interested in taking up measures. Interest in biodiversity stood at 55%, clean water supply at 66% and rural beauty and heritage at 47%.

There was a wide difference in measures already being employed. Just 3% of respondents received payment for clean air measures, 6% were already being rewarded for pollution prevention or mitigation and 8% were paid for beauty and heritage work. While a similar number (9%) were rewarded for clean water strategies, by far the highest level reported was in encouraging biodiversity at 29%.

In England, farmers were asked about the Environmental Land Management (ELM) schemes. Under ELM, the new Countryside Stewardship Plus scheme was the most attractive. Some 56% indicated they would be interested in joining, while 15% would consider measures under the Landscape Recovery scheme. But the Sustainable Farming Incentive had declined in popularity from 67% when it was first mooted in 2021 to 49% by spring 2023. There was also an increasing number of farmers who were not interested in joining any of the ELM schemes, with 27% saying they would not get involved compared with 18% in 2021 and 23% last year.

Focusing on carbon, fewer than one in five (19%) have measured their footprint. This varies significantly between regions, with the highest proportion in Scotland at 31% and just 17% in England and Wales. Across the UK, 41% were



considering measuring carbon, but a slightly increased proportion said they have neither assessed, nor intend to measure, their output.

Meanwhile, the number of farmers in carbon-capture schemes remains extremely low at 4%, albeit a doubling of the 2% in the previous survey. Just 1% belong to a carbon credit trading scheme. The lack of engagement points to a high degree of uncertainty over the carbon credit system and a wait-and-see approach to the still developing market.

Information and government policy

The apprehension in going forward with carbon footprinting is reflected in high levels of concerns about the lack of information on the issue. About 88% of UK farmers said information needed to improve their approach to

TRANSITION FARMER: VAUGHAN HODGSON

Cumbria-based Transition Farmer Vaughan Hodgson echoes the views of survey respondents. He farms a mixed unit of cereals, grassland and 120,000 broilers, and says he is cautious about the future. "We are looking at losing the Basic Payment Scheme, but the rollout of proposed environmental schemes has been patchy and rules are complicated. There are so many different ones and it seems the names of grants change all the time. When schemes are launched, they are too complicated to take in for people who are often flat out running their businesses," says Vaughan.

"Guidance books run to 150 pages and associated paperwork requires a consultant to explain it. You fear missing out on things that might be crucial for your business," he adds. "I would like to see simpler schemes with more concise information backing it up. We also feel that politicians and the people who come up with the schemes don't understand what it's like to manage a farm.



Grain prices have fallen from a £300/t high to sub-£200/t, but the inputs used to grow the crop were bought at peak prices. We cannot set our prices, so when politicians suggest the market should determine values, it is delusional to keep saying it will

solve the problem. It doesn't work in food production," says Vaughan.

"It's the same across all farming sectors. While 95% of farmers want to improve the environment, the schemes don't work financially." Vaughan recently looked into funding for new technology. But the prescriptive scheme rules required costly additional equipment to be bought. The extra outlay negated any benefit, so there was no point in continuing the application.

While he is cautious about the current situation, Vaughan says he will continue to look for opportunities. "We are willing and enthusiastic about farming, but we are exposed to more risk with every decision we make."

● **Vaughan Hodgson is one of our 16 Transition Farmers who are updating us as they adapt their business for life after BPS. Find out how you can follow his journey on p5**



SURVEY COMMENTS

Survey analyst Heather Macleod said while respondents were keen to explore new opportunities and willing to change, she was struck by the degree of concern about the future. “The majority of comments revealed significant concern about the political approach to farming and the environment both by the government and opposition parties. And the proportion of those people expressing fear about the future has gone up. Most think farming is not understood by the government and there is insufficient knowledge and expertise among policymakers,” she said.

Comments made by respondents showed many had doubts about the viability of their business and future UK food security.

- “We need food; wildlife should be looked after alongside food production, not instead of it.” *Farmer, West Midlands*
- “The government and

opposition have no understanding of the realities of farming, and care even less.”

- *Grower, East Anglia*
- “Government personnel [are] too distant from the reality of farming on the ground.” *Farmer, Scotland*
- “Food production and food security are too far down the agenda.” *Farmer, Yorkshire*
- “[There is] no clear vision or guidance, especially with respect to imports,” *Farmer, Wales*
- “Welsh government demands on land use – for example, tree planting and habitat – are excessive.” *Farmer, Wales*
- “It seems the true hill farmers have been bypassed. How can it cope with no single farm payment when that is the main profit on an extensive hill farm?” *Farmer, northern England*
- “Council red tape. Limited diversification opportunities. High interest rates discouraging investment. The list is endless. Planning costs a fortune and gets knocked back almost always several times for anything, costing thousands in reapplication.” *Farmer, Yorkshire*



carbon management was lacking. Views on air quality measures were similar, with 83% stating they needed more information.

Likewise, questions on biodiversity, water quality and heritage issues recorded dissatisfaction at the level of guidance among more than two-thirds of responses. Soil health produced little better results, with 50% calling for more advice.

Of the advice areas, business management guidance was seen to be the best, although there were discrepancies in this category according to age. Some 51% of farmers aged 45 and over said they received sufficient information on business management. But less than one-third (31%) of farmers under 44 years old agreed that business management advice was adequate.

Overall, only 12% of UK farmers felt they had enough guidance on farming policy. Region by region, 97% of farmers in Wales, 93% in Scotland and 87% in England believed they had insufficient information to make changes. However, the overall proportion of dissatisfied farmers has reduced from 92% in 2022 to 88% in the latest survey.

Dissatisfaction over the lack of advice and the wider farming vision is reflected in dwindling support for the government’s strategy. Levels of discontent with the farm strategy have risen steadily from 72% in 2021 to 81% last year, and 87% in the spring of 2023. Just 2% of farmers – down from 7% in the initial survey – were still happy with the government’s long-term farming policy.

In Wales, no farmers said they were happy with the Cardiff-based government’s vision for farming, while Scotland’s producers were the most satisfied, albeit at just 4% of respondents. Asked about their own government’s vision, more than two in five (42%) said it showed policymakers had failed to understand farming. One in 10 said the policy would ruin farming if it continued to be implemented and more than a quarter (27%) said it should be refocused on home-grown food production.

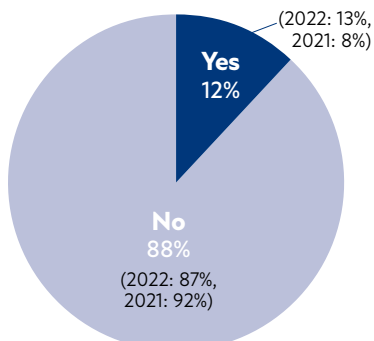
Sustainability

Lack of support and funding also topped the concerns over sustainability. More than half (52%) of farmers blamed an uncertain future for their businesses on a lack of funding/profit, poor government support and issues surrounding the planning process. Others, totalling 30%, saw costs, food prices and supermarket policy as responsible for the lack of sustainability.

Asked whether their units were sustainable, the number of farmers who said “no” increased from 19% in 2022 to 26% this year. Across all regions, less than half (43%) of farmers felt their units were sustainable – a decline from last year’s 54%. However, while England (42%) and Wales (41%) were close to the average, almost two-thirds (61%) of Scotland’s farmers believed they farmed sustainably. Scotland’s situation was also an improving picture, up from 48% in 2022. ■

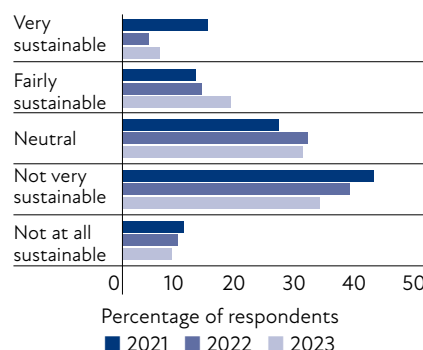
GOVERNMENT SUPPORT

Fewer than one in 10 have enough government information on support measures



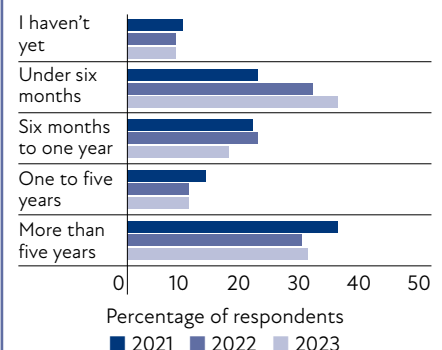
SUSTAINABILITY

One-fifth believe their farm is not sustainable in its current form



LIFE WITHOUT DIRECT PAYMENTS

Seven in 10 have started preparing for life without the basic payment



PHOTOGRAPHY: VISUALIS WORLD/ADOBE STOCK, GRAFART/ADOBE STOCK, PIVASET/ADOBE STOCK, ANGUS FINDLAY

How can energy reduce the risk to your farming business?

With an ever-changing environment, landowners and farmers continue to face uncertainties. Here we outline two ways energy projects can diversify revenue streams and add consistency to your income.



Host a renewable asset

With the drive to reduce carbon on our electricity network there is a push to deliver more renewable projects, whether solar farms, wind turbines, utility scale batteries or even hydrogen projects. This demand will continue to grow as pressures on the electricity grid increase.

In 2021 the UK government set the world's most ambitious climate change target, cutting emissions by 78% by 2035 compared to 1990 levels. This would bring the UK more than three-quarters of the way to the overall target of achieving net zero by 2050. By generating greener energy on your property, you can contribute directly to the UK meeting these targets.

As well as helping the environment you can also benefit financially and diversify your portfolio. Energy land rental projects offer you increased incomes over more traditional agricultural activities. They offer a guaranteed, stable income for up to 40 years, enabling you to plan for the future and protecting viability for the next generation and beyond.

There are several key questions to ask when researching a potential development partner. Are they an experienced developer with a strong heritage and an equally strong balance

sheet - as these projects are expensive and time-consuming? Will they develop, build, own and operate the asset rather than seeking to sell it to the highest bidder at each stage, as this gives you the certainty of a long-term partnership? Finally, do they look at all types of technology as this maximises the chance of success and helps to counter the difficulties the grid is currently experiencing with connection timeframes? Get started:

email landowners@conradenergy.co.uk

Earn from your renewable asset

You can sell the energy or the excess energy you don't use on your farm from your existing renewable asset through a Power Purchase Agreement (PPA). This means you can benefit from not only reduced energy bills but also a diversified and additional income stream. PPAs provide a unique opportunity for you to contribute to decarbonisation whilst simultaneously promoting sustainability and enhancing your financial stability.

Once your PPA is in place, your chosen provider will trade the energy your asset produces on the energy markets. When selecting your PPA provider, ask whether they effectively use technology to optimise asset performance? Is

their software developed in-house so they can continually develop it to maximise results? Do they have their own trading team who can utilise their industry expertise? And finally, have they a multi-technology portfolio that can react to the grid and fulfil energy obligations, allowing the trading team to get the best value. Let's work together: *email ppa@conradenergy.co.uk*

Whether you are looking for a PPA contract for an existing asset or considering hosting a renewable energy development talking to a reputable developer, such as Conrad Energy, is the first step.

To find out more

Call 01235 427290

Email info@conradenergy.co.uk

Visit conradenergy.co.uk





Megan Hudson and Luke Palmer of Fenland Soils, with one of the network of flux towers used to monitor emissions

How fenland farmers are cutting GHGs from peat

High greenhouse gas emissions from drained lowland peat soils in the Fens threaten how they are managed and what they produce. **Louise Impey** reports

Finding ways to continue to farm on lowland peat soils while also reducing emissions and meeting climate targets is the urgent challenge facing growers and producers in the Fens.

Known for its fertile and highly productive soils, the region makes a vital contribution to food production, growing 33% of the country's fresh vegetables, as well as providing valuable habitat and ecosystem services.

Despite this economic and social value, the Fens are fragile, acknowledges John Shropshire, chairman of the G's Fresh group of companies, which is headquartered near Ely, Cambridgeshire. John is also chairman of Fenland Soil, a not-for-profit organisation dedicated to tackling climate issues relating to agriculture and peat in the Fens. He believes that the future role of the fenland area is up for debate due to farming practices on drained lowland peat resulting in greenhouse gas (GHG) emissions – mainly carbon dioxide – making them an obstacle for reaching net zero. “There are no easy answers or quick wins,” says John. “Drained lowland peat soils emit carbon dioxide and are vulnerable to

subsidence, so we need to find ways to limit those, while still producing food.”

A thriving environment and productive farming can go hand-in-hand in the region, despite the unique set of pressures, most believe. However, conflicting priorities must be addressed so that balance can be restored. That may mean introducing management changes, assessing alternative crops or taking some areas out of production.

Meeting the challenge

Fenland Soil was set up two years ago to tackle the climate issues relating to agriculture and

WHAT DO THE FENS DELIVER?

- £3.1bn value of the food chain in the Fens
- 33% of England's fresh vegetables grown
- 21% of bulbs and flowers grown
- 80,000 people employed in farm-to-fork supply chain
- 90% of Fens farmland is Grade 1 or 2

peat. Putting equal focus on sustainability, opportunity, innovation and learning, the farmer-led group is working with experts from across the industry, to get a better understanding of how they can operate in a more sustainable way.

As prof Chris Evans of the UK Centre for Ecology & Hydrology (UKCEH) explains, lowland peat soils hold more carbon than any other ecosystem and, even where soils have been depleted over time, they make most other habitats look like deserts. “One hectare of 30cm-deep peat holds as much carbon as 1ha of primary tropical rainforest,” he says.

The problem arises when these soils are drained, as that exposes the waterlogged organic matter to decomposition and compaction, releasing carbon dioxide and causing subsidence. “Peat needs to be wet or it decomposes,” summarises Chris.

For context, total UK GHG emissions in 2020 were 409m tonnes carbon dioxide equivalent (CO₂e), while total peat emissions were 18.8m tonnes – as much as 4% of the total, which cancels out the forest carbon dioxide sink. Peatland emissions are estimated to account >

for up to one-third of the Fens' carbon release and represent 1% of England's total emissions. "If these soils are drained, they will emit," he says. "Even wasted peat still emits, albeit at a lower rate." Wasted peat is the term given to soils where the remaining peat is all contained in a 40cm plough layer. Only soils with less than 10% organic matter are approaching equilibrium. The initial drainage work in the Fens was carried out in the 17th century and has since been expanded and enhanced, but much of the current pumping infrastructure is dated, says Chris.



from lowland peat to inform decision-making. This work will continue and is being merged with field management information, so that emissions for different crop types can be established. For Chris, simply stopping all farming activity in the region is a luxury that the country can't afford. "We can't expect farmers and associated businesses to take such a huge personal loss for the good of society. A far better approach would be to grow food in a sustainable way on the most productive areas and manage other areas for carbon and biodiversity. There needs to be a balance between food, energy and public goods production."

Raising the water levels is an option, but there is a balance to be achieved between carbon dioxide and methane emissions. "If you simply flood a system, methane becomes a problem. So turning the Fens into a giant shallow lake isn't the answer."

For this reason, ditches are also an issue, he explains. Fully saturated strips in the landscape are "methane factories", adding to the complexities of moving towards net zero. A network of flux towers constantly measures emissions

Solutions pending

Robert Caudwell, chair of the Lowland Agricultural Peat Taskforce and a farmer in South Lincolnshire, believes finding a sustainable way forward is possible, providing farmers recognise the urgency. "We must start to act," he stresses. "I'm confident that there is a farming future in the region, but that may mean you have to change how you manage the land."

He is still waiting for the government's response to the taskforce report but points out that different areas of peat need different solutions. "What works will in the Fens might not work in the Somerset Levels," he says. "That's why groups led by local farmers are important and government's role should be to enable these groups to do what's required."

Water is always important with peat, so water level management – something that has been done for years – will play a future role. "We know

WHAT IS PALUDICULTURE?

Paludiculture is the term applied to farming on rewetted peat and is a system for the production of wetland crops, such as thatching reed, typha and sphagnum.

Farming at higher water tables reduces the greenhouse gas emissions associated with the current agricultural use of these soils. As such, it could be one component of lower-emitting peat landscapes in the future. Companies such as Saltyco, a next-generation materials manufacturer, are creating textiles from plants grown in wetland and peatlands. Its first product, BioPuff, is a plant-based fibre fill for insulating clothing.

WATER LEVEL MANAGEMENT

Water level management is key to the future of farming on lowland peat, and measures that help farmers to manage water are required. Bringing the water level up to 20cm seems to be the point at which a balance is reached in terms of emissions – as methane production switches off and carbon dioxide release shuts down. Another option is to bring water levels higher for some of the year, especially at times when land isn't being cropped, to prevent soil loss. Adding organic matter and using mulches are also in the frame.



Fertile, low-lying land provides the ideal environment for growing veg crops such as peas



Innovation and research is vital to the future of water management in the Fens



the issues and now we need more innovation and research to help us with water management.” Robert notes that paludiculture (see left) and emerging natural capital markets have potential for the Fens but stresses the need to be able to stack carbon and biodiversity schemes to make them viable.

Economic considerations

That’s a point shared by Megan Hudson, general manager of Fenland Soils, who says that it is possible to mitigate the risks and grow high-value crops in a different way. But that farmers and growers are still waiting for guidance from the government and details on what funding will be available. “The current ELM (Environmental Land Management) proposals don’t meet requirements,” she says. “There are two options for raised water table management but they simply don’t provide enough money for replacing very valuable crops.”

She also points out that while crops can be grown at raised water tables, dealing with them is very difficult. “Getting them harvested, or >



One of the flux towers monitoring emissions

WHAT ARE THE OPTIONS FOR FENLAND FARMERS?

- Crop choice
- Paludiculture/wet farming
- Higher water table
- Surface irrigation/rewetting
- Soils technology/robotics

WHAT IS BEING DONE IN OTHER COUNTRIES?

Canada

In Canada, some 35% of vegetable production is on drained agricultural peatland, where there’s an average soil loss of 2cm/year – with consequences for soil quality and productivity.

Since 2016, work has been carried out to address soil degradation, which involves assessment of biomass production and the use of soil amendments. “Using degraded areas to grow high-yielding biomass crops such as willow and miscanthus – so that we also had enough material from them to use as a soil amendment – was successful,” reports professor Jacynthe Dessureault-Rompere of Laval University. A soil amendment rate of 12t/ha a year maintained soil height, Jacynthe notes. “Using the right amendment at the right rate can compensate for the loss of soil.”

Sweden

In Sweden, where soils had to be drained to produce anything, it has been possible to reduce emissions. “It’s not easy and every site is unique,” says Dr Orjan Bergland. “Our soils don’t behave in the same way – their physical properties mean that they have different oxygen levels when they are drained.”

No effect on emissions was seen when the soil was managed differently, with ploughing and shallow tillage producing the same results. The same was true of crop type. Soil amendments did have an effect, with emissions dropping by 20%, when plots were treated with 5cm of foundry sand.

“Another finding from our work is that carbon emissions from abandoned peatland do not decrease with time after agricultural practices have ceased.”

The Netherlands

In the Netherlands, some 50% of the country’s emissions come from the peat soils that are drained for summer grazing by the dairy industry. Subsidence is taking place at a rate of 1cm/year, reports Joost Kenskamp of Wageningen University. There are two national research projects being undertaken to address the issue. “We have higher emissions from our peat soils than the UK, but lower than those of Germany and Denmark,” says Joost.

Dutch farmers are against raising the water table above 60cm, as it increases the risk to their businesses in the face of climate change. “Where that isn’t possible, we have looked at soil amendments and alternative crops. A thin layer of clay applied in the top of the peat did help to bring emissions down without any detrimental effects.”

< carrying out weed and disease control, is problematic. Even with the advent of new technology, travelling on these soils will be an issue.”

She adds that tree planting is not permitted on the Fens – ruling out an option that applies to farms in other parts of England. Regenerative farming practices aren’t suited to soils with high organic matter, so that discussion is not relevant either.

Thanks to £96,000 of Discovery Grant funding from Natural England, Megan worked with Elizabeth Stockdale of Niab

across 36 farms and three internal drainage boards last year to collect data on

soil types, hydrology and productivity. This information was then used to highlight

areas where changes to water table management could be

introduced and what other types of funding, such as biodiversity net gain and carbon, could apply.

“Land use management across the 140,000ha of lowland peat in the Fens will be a feature in the future,” predicts Megan. “Getting the balance right between food production and environmental protection is possible with the right co-operation and willingness to engage.”

While some of the highest emitting crops may be removed or restricted, there will be a whole range of options employed and technology will have a key role, she adds. “This is why we are collecting the data, working with others and sharing our findings.” ■



LOWLAND PEATLAND CODE

An update of the Peatland Code – a voluntary certification standard for UK peatland projects wishing to market the climate benefits of peatland restoration – now includes fenland peat soils.

This means that for the first time, fenland peatland being restored or rewetted will be eligible for carbon credit registration. These projects are now expected to attract private investment and support, after it became clear that public funding alone was not enough to cover the costs involved or persuade landowners to change.

“Fens with a minimum peat depth of 45cm are now eligible for restoration under the Peatland Code,” explains code co-ordinator Renee Kerkvliet-Hermans. “Along with the huge carbon benefit that can be realised for this update, there is also the chance for long-term protection and enhancement of the natural environment.”

LUKE PALMER, FC PALMER & SON, CAMBRIDGESHIRE



Luke Palmer is working to reduce soil damage

Farming 1,618ha from Stretham, near Ely, in the Fens, Luke Palmer is very aware of the pressures being brought to bear on local growers as he considers what his farming business will look like in the future.

Luke, who is vice-chairman of Fenland Soil, has always recognised the need to protect his fenland soils. His goal is to pass on the farm to the next generation in a better state. He has used measures such as higher cutting height at harvest and chopped straw to limit soil loss and damage.

However, the emphasis changed to carbon and meeting net zero obligations around two years ago, following the Cambridgeshire and Peterborough Combine Authority’s *Independent Commission on Climate* report. “We were intent on preventing erosion and degradation – now the situation has been given a different focus,” says Luke. “Even so, it’s really important that we avoid tunnel vision, as there are biodiversity, social and economic factors at play in this unique landscape, not just carbon dioxide emissions.”

He also makes the point that fen soils are releasing carbon, even when not being farmed. “Nobody wants to lose or damage their soils, or risk their livelihood, which is why we are collaborating to come up with a common answer on how we move forward.”

Luke’s business is very diverse – some land is rented out for vegetable and turf production, and he grows potatoes, sugar beet, wheat, beans, peas and barley. There are also 98ha of solar panels, two reservoirs – one of which hosts an aqua park – and a joint

venture sheep enterprise. “Some of the farming businesses in the Fens are very specialist agri-businesses, but we have deliberately maintained as much diversity as possible.”

Luke accepts that some areas of the Fens could be taken out of production, but he is concerned about what the future holds if sufficient funding isn’t forthcoming. “Once BPS has gone completely, we will be exposed. Everyone tells us that diversity is the way forward for offsetting or reducing emissions, as well as generating other income streams, but intensifying production is often the most viable option.”

Luke hopes that the future will involve greater integration with Internal Drainage Boards, perhaps with them becoming water facilitation boards, and would like to see funds available within catchments for opportunities such as localised flooding. “Market-driven cropping will always be part of the mix, but it’s important to recognise that the situation has never been static in the Fens. “We’re more than happy to trial different techniques and farm in different ways if the data supports that and it makes business sense.”

A trial by the UK Centre for Ecology & Hydrology on his farm last year highlighted some of the complexities involved. Growing winter wheat at a higher water table resulted in a 25% reduction in carbon dioxide emissions, but also gave 25% less yield. “We will repeat the work as it was done in last year’s heatwave, so keeping the water levels up proved challenging” he says.

The challenge of nature recovery: How, what, where?

Farmers are facing growing pressure to take action to reverse declines in wildlife and biodiversity. But what practical steps can they take to play their part in meeting government targets?



The government has said it expects 65 to 80% of landowners and farmers to adopt nature-friendly farming on at least 10-15% of their land by 2030.

“The challenge is that talking about levels of biodiversity in the countryside can be divisive,” says Jonathan Armitage, Head of Farming at Strutt & Parker. “Many farmers feel under attack when the conversation turns to declines in wildlife species. Meanwhile, environmental groups are frustrated by what they view as slow progress in this area.

“Listening to the views of the various stakeholders there are also differences in opinion on the right way forward. For example, some favour land sharing, which is the concept of embedding nature-friendly farming methods across all farmland. Others prefer land sparing, which is about concentrating food production on high-yielding land and creating wildlife-rich habitats on the other areas.

“With no universally agreed position, it is hard for farmers to know what is expected of them,” says Jonathan. “So, we have been thinking about what nature-friendly, profitable farming looks like in practical terms and how schemes like the Sustainable Farming Incentive (SFI) can be used to help support it.”

Although the rollout of the SFI has not been

without its challenges, it is flexible in that farmers can sign up on a rolling basis and the 2023 version of the scheme now contains popular options previously only available through Countryside Stewardship.

The best starting point for encouraging nature recovery will always be to manage existing features of the farm – particularly any unfarmed areas like woodland and scrub – well, as they will be the most wildlife-rich areas. The next step is to look for ways to expand them and join up areas of habitat with corridors of a similar habitat.

“Overall, a target of 10% of land on a farm being dedicated to providing good quality wildlife habitats should be achievable if this area includes woods, trees, hedges, watercourses, rough grass, and pollinator- and wildlife-food habitats. However, just as good crop and livestock management is required for achieving agricultural objectives, good management is also required for habitats to achieve wildlife objectives.”

Hedgerows and field margins often form the main network of uncropped areas on arable farms so should be managed to support local species throughout the year, including during the ‘winter food gap’.

The SFI 2023 offers payments of £10 per 100m for managing one side of a hedgerow

and £451/ha for buffer strips between 4m and 12m wide alongside arable land.

“Navigating the various options under the SFI and CSS, alongside other natural capital opportunities and, of course, running an efficient farming operation is challenging,” says Jonathan. “However, our specialist advisors are engaged in this work all the time and would be delighted to help. Alongside the creation of new habitats, being as efficient as possible will also reduce the negative effects associated with the use of fertilisers and pesticides, as well as helping to boost profitability.”

To find out more

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FARM FACTS

MW Farming,
Criddon
Hall Farm,
Bridgnorth,
Shropshire

- Farm size: 1,100ha
- Crops: Wheat, spring oats, spring barley, winter beans, oilseed rape, triticale
- Annual rainfall: 724mm
- Soil: Sand to a medium loamy clay

Taking a proactive approach to managing inputs and marketing is helping a first-generation farmer shape a more sustainable future. **Jonathan Riley** reports

Arable grower Matthew Williams farms 1,100ha of rented or contract-farmed land – a situation that has brought profitability, sustainability and input cost control into sharp focus.

Shropshire-based Transition Farmer Matthew is a first generation, younger farmer who developed a passion for agriculture at school. In 2007 he went to Harper Adams University, coming away in 2011 with a degree and a full-time tractor driver job at Criddon Hall Farm. The major turning point in his career came in 2016 when the owner of the farm announced he was stepping back from farming and planned to let all of his land.

Matthew put together a robust business plan and secured backing from Lloyds Bank. “Without the understanding and proactive support from the bank at that stage, I wouldn’t have been handed the contract for Criddon Hall and wouldn’t be where I am now,” he acknowledges.

Despite a tough first four years, Matthew has built an 1,100ha business, with several tenancies, including a 200ha stubble-to-stubble contract. He has two permanent staff, and employs as many as five seasonal workers to cover peak periods. Making a margin while delivering what individual client-landowners want, relies on attention to the minutest detail. “Farming without subsidies and land-based assets as a fallback means we have to focus on every input and achieve optimal yields to make a margin,” he says. “My big thing is cost control – the entire operation is run on a

spreadsheet that I update continuously. I know 99% of my costs at any one time; I know exactly where I am each month and have identified cashflow pinch-points well ahead.”

Marketing

Matthew uses data from traders and independent analysts, including ODA Connect, and studies grain markets as often as five times a day. Playing the market has improved returns by as much as £60,000 in one year (2018). The target is to continue refining the process to maximise grain prices and switch to reduced cultivations. Practical farming is managed in fine detail and has continued to move towards a regen approach since 2020.

The farmed area has been mapped using Frontier’s MySoyl precision data management system. It allows the farm and consultants to log and assess nutrient and pH profiles, along with yield data, seed-rate calculators and a mapping/recording facility for environmental work. Matthew says this helps him better manage fuel and fertiliser use, and isolate the business from exposure to swings in prices in the future.

Fertiliser

Detailed soil analysis pointed to a need to exploit nutrients, such as phosphate, that were present but locked up. Applying gypsum to mobilise magnesium freed up phosphate reserves allowing lower and variable fertiliser rates.

Reducing bought-in artificial fertiliser is also the thinking behind a straw-for-manure deal with a local livestock farmer. Although the overall aim is to be less dependent on bought-in fertiliser, gross margins are put first. Matthew will not sacrifice yield if grain prices are good, so fertiliser is still applied to maximise margins. Yields are maintained with artificial N, but a move to liquid

application is providing increased accuracy and helping to limit overall use.

Fuel

Fuel use has been cut with the switch to low-disturbance farming methods. Previously, he ploughed ahead of winter barley using about 30 litres/ha of diesel, but moving to strip-till saw a drop to 15 litres/ha. The farm has also introduced cover crops, aided by a switch from winter to spring barley.

Some farmed areas used to suffer significant soil erosion, but the strip-till and cover crop regimes have eliminated the problem. Soil structure has improved immensely, and areas that were previously too wet to crop have started to come to life, with worm numbers increasing. In another bid to exploit free nutrients, the cover crops mix will be tweaked to include deep-rooting legumes and improved palatability for sheep grazing.

With structure improved, soil has reached a stage where direct-drilling is achievable. This year, the farm’s Mzuri strip-till drill has been replaced by a 6m Claydon and a second-hand John Deere 750A direct drill. It has cut fuel to 11 litres/ha, and the target now is to drop to 3.5 litres/ha.

Fewer operations means Matthew can achieve more with the same amount of machinery, spreading fixed costs over a wider area and improving the process of growing crops. This gives MW Farming scope to tender for further blocks of land. “Expansion is an aim, but it will only ever be through farming land to meet what the owners want and to leave the land in a better state than we found it,” he says. ■

● Follow Matthew Williams and our other Transition Farmers as they adapt their business for the new environmental schemes. Find out more on p5

TRANSITION GOALS

- Improve profitability and margins
- Continue to improve soil health
- Control and optimise input use

Wales leading the world with new genomic breeding data

The use of genomic breeding values is well established in the dairy sector and developing quickly in the beef industry but has not been prevalent in UK sheep sector, until now.



Sheep genomics can play an important role in identifying and selecting livestock for mating with the best genetics for specific breeding objectives, such as ewe longevity, maternal ability, lamb weights and meat quality. Wales is now leading the way, worldwide, in developing genomic breeding values in the hill sheep sector.

Using a uniquely large DNA database from Welsh sheep, the information has been gathered during the Hill Ram Scheme - a five year project delivered by Hybu Cig Cymru – Meat Promotion Wales (HCC).

Funded through the Welsh Government and EU Rural Development Programme, a feasibility study was conducted showing that genetic links between flocks shows genetic merits that are relative to the wider recorded sheep population. This offers breeders increased accuracy and confidence in genetics.

Genomic Estimated Breeding Values (GEBVs) are used in the same way as non-genomic breeding values and contribute to the breeding index used to buy and sell livestock developed for hill sheep.

John Richards, Hybu Cig Cymru Producer and Processor Lead said: “The use of genomic breeding values is well established in the dairy sector and developing quickly in the beef industry. However, this has not been the case for the UK sheep sector.”

“We are excited to be leading this ground-breaking work within the sheep sector, here in Wales. The Hill Ram scheme has already explored the feasibility of developing genomic breeding values in hill sheep which will support our key priorities of farming in a sustainable and effective way.”

One way farmers will look to enhance breeding evaluations will be to move away from making predictions about genes thought to be inherited by an animal and use genomic information to share the actual genes it possesses.

John Richards continued: “As part of the Hill Ram Scheme, 50 farmers participated in the feasibility project taking tissue samples from lambs, ewes and rams to extract DNA sequences (genotypes) in order to determine the parentage of lambs.”

“While these genotypes allow verification of parentage and show individual genes that may have a large impact on performance, they can also be used to inform breeding evaluations around thousands of tiny genetic variations on DNA strands that, when combined, contribute to the overall genetic merit of the animal.”

Genomic information can provide a wealth of intelligence and information, but it is particularly useful for traits which take a long time to be assessed, such as ewe longevity, traits expressed through females and traits that are

very expensive to record, such as meat quality.

HCC’s Hill Ram Scheme has been a five-year initiative to empower hill farmers and breeders to access genetic information through the latest DNA recording technology. This has enabled performance recording to proceed without disrupting their hill management systems by allowing the detection of parentage by matching the DNA of the ram, the ewe and the lambs.

Part of the wider Red Meat Development Programme and funded through the Welsh Government and EU Rural Development Programme, the project’s fundamental aim has been to encourage the use of data and genetics for hill farmers and breeders to make informed decisions about their flocks.

“We now look forward to seeing how this legacy continues and further informs the wider sheep sector here in Wales.”

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How collaboration delivers landscape-scale change

Farmers are working in cluster groups to deliver greater benefits for soil, water and wildlife. **Louise Impey** reports

Farmer cluster groups are meeting local environmental priorities both on their own farms and beyond their boundaries. The term “cluster” was adopted, because it describes how members of these groups are typically situated around a landscape feature such as a wood or river.

Joined-up thinking and land management planning, together with the right training and use of data, has allowed clusters to help expand and connect valuable habitats as well as recover important species. Recognition that nature doesn't respect farm boundaries was the catalyst for the first formal cluster. It was established in 2012 after the coalition government in power at the time announced a competition to create 12 nature improvement areas, with funding attached.

Among the selected applications was a group of farmers, covering 10,000ha on the Marlborough Downs, with a plan for improving wildlife and biodiversity. When that pilot ended in 2015, the group vowed to continue and today is known as Space for Nature. It set the standard of bottom-up, farmer-led groups, who wanted to share their knowledge and create landscape-scale change.

Since then, at least another 150 groups have been formed as the concept has taken off. Ini-

tially driven by the Game and Wildlife Conservation Trust, there are now a range of organisations and advisers involved in their development.

Central Chilterns Farmer Cluster

The Central Chilterns Farmer Cluster was established in autumn 2018, when 10 pioneering farmers formed the group and the first winter farmland bird surveys were conducted.

The cluster was led by Buckinghamshire farmer Ian Waller, who saw the Chilterns landscape as a unique farm setting. He was keen to bring in some of the smaller farms in the area that were interested in conservation projects but lacked either the expertise or funds to implement them.

By spring 2019, the cluster membership had grown to 16 farmers and National Lottery Heritage Funding for five years had been confirmed. At this stage, all the members agreed to get a better understanding of wildlife on their farms, collaborate and work together and use the group as a means of adapting to future change.

With the Environmental Land Management (ELM) scheme on the horizon, the cluster had the additional aim of getting its members com-

fortable with issues such as carbon sequestration and soil health. By the summer of 2020, the cluster was actively delivering specific projects on eight farms, through its partnership approach to accessing advice, achieving project design, securing funding and establishing monitoring, in an end-to-end support package

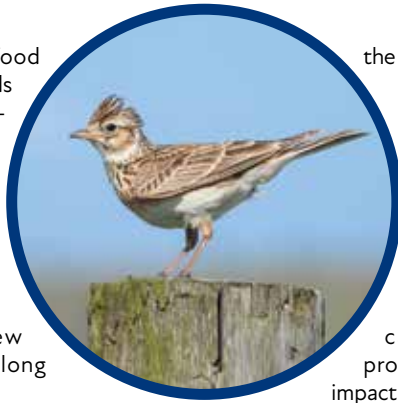
Winter 2021 saw 18 farmer members covering an area of 6,500ha, with an average farm size of 360ha. These farms either hosted or adjoined nine sites of special scientific interest (SSSI) and 54 local wildlife sites and were in the Buckinghamshire section of the Chilterns area of outstanding natural beauty (AONB).

The clusters' results speak for themselves. Supported by 50 experts, specialists and contractors working together, the following are just some of what has been achieved:

- 3.1km of pollinator margins created
- 18 whole-farm plans written
- 52 owl boxes made and installed
- 286 species recorded on botanical surveys of arable reversion chalk grassland and arable margins on one farm
- Landscape-scale conservation planned, delivered and monitored
- 20 Longworth traps purchased for small mammal surveys

TRANSITION CLUSTER GROUPS

- < ● 23t of supplementary food provided for farmland birds
- 50 Game and Wildlife Conservation Trust Big Farmland Bird Count visits
- 339 birds ringed with Hughsden Ringing Group
- More than 600 skylark recorded on one farm
- More than 20,000 new hedge whips planted along 4,000m of hedgerow
- 1,565m of hedgerow coppiced
- 33.5ha of chalk grassland managed
- 4.4ha of flower-rich meadow created
- 4.6ha of planting to provide winter food for birds.



In terms of finances, an initial investment of £387,500 spread over five years covered staffing costs of £175,000, specialist advice/consultancy fees of £65,000, equipment and material costs of £20,000, capital funding for contractors of £125,000 and volunteer equipment and materials of £2,500.

It is estimated that every £1 invested has triggered £3.71 of additional spend on nature recovery. The farmer cluster has also delivered £111,562 of health and wellbeing benefits for

the Chilterns from volunteering. In 2021, a partnership between the group and the Rothschild Foundation supported a cluster-wide approach to reducing carbon emissions. All members received individual carbon reports, and an additional cluster-scale carbon assessment was produced to show the wider impact of reducing emissions. The cluster was chosen by Defra as one of the five pilot areas for the development of Local Nature Recovery strategies. It is also in Buckinghamshire's Natural Environment Partnership, which brings together groups that want to make a positive change for nature.

As chairman Ian Waller explains, the Central Chilterns cluster's work proves that delivering large-scale projects requires sufficient funding. "Getting farmers to engage needs understanding and buy in, which takes money," says Ian. "There aren't any overnight solutions – but as you build relationships and break down barriers, you see habitat management and conditions improve, leading to change at scale and species recovery." ■



TRANSITION FARMER: ED SHULDHAM

Being one of the founder members of the Wylve Valley Farmers Cluster has allowed Transition Farmer Ed Shuldham, JM Stratton & Co, Wiltshire, to learn from others in the group, receive relevant training and ensure that valuable habitats on the farm are being protected and enhanced.

By working together, the group members can access advice and support that would otherwise be unavailable or too costly, visit other farms in the area and understand how any changing management practices have contributed to success. "Whether it's looking at how a very comprehensive stewardship scheme has been designed, observing how direct-drilling is helping to reduce sediment loss or investigating better methods of manure management, there are always things we can learn from each other," Ed says. "If that expertise doesn't exist within the group, or we identify areas where we need additional support, we can use some of our funding to bring it in."

Established in 2017, the group has grown over time and now includes 30 members covering 12,000ha between Warminster and Wylve. Membership reflects the diverse range of farms found in the area, with all welcome to join. Originally self-funded with each member paying a subscription, it has since received money from the Countryside Stewardship Facilitation Fund, which covers some, but not all, of its activities. Other sources of income include



grant applications for certain projects, charitable donations and private company contributions, especially those that have an interest in community projects.

As Ed explains, the focus of the cluster is biodiversity and water, as the area has two important environmental priorities – rare chalk downland and the river Wylve, which is a chalk stream. Both are protected sites that will benefit from connected management, so the activities reflect that. "The River Wylve is a chalk stream and we know that its condition has deteriorated," he continues. "We are all very keen to put that right and have been working with the Wessex Rivers Trust and the Wiltshire Wildlife Trust to restore it."

As a result, the cluster has recently set up a system of water monitoring, for which a laboratory has been established and photometer equipment purchased. Training from the Game and Wildlife Conservation Trust and Rothamsted Research has also been secured, so that the monitoring results meet the Environment Agency's

WYLVE VALLEY FARMER CLUSTER – MAIN ACTIVITIES

- Reducing water pollution
- Flood alleviation
- River restoration
- Priority habitats
- Farm wildlife
- Wild pollinators



SETTING UP A CLUSTER GROUP

It all starts with a farmer who has an interest in conservation, says Ian Gould of Oakbank, who stresses that all successful clusters are farm-centric. Securing funding allows a facilitator to be appointed and ensures that farmer aims and targets are adhered to – often because there’s a management team of farmers working with the facilitator to keep the initiative on track.

While there is government funding in the form of the Facilitation Fund – which has a three-year limit – accessing that money can be a long, drawn-out process fraught with difficulties. “Increasingly, there are privately run cluster groups, where farmer members either pay a subscription to be part of the group, or organisations such as water companies provide funding and invest in the activities undertaken,” he says. “Being paid to put some habitat in the right place works for both the farmer and the water company, for example, in certain catchments.”

Many of the groups that started just as Covid hit were unable to spend all the money Defra allocated but were prohibited from rolling on, which is why they are

increasingly being supported by new and different funding models. “If farmers invest in these groups, it confirms their commitment. We’ve seen how successful they can be – many have got oven-ready projects that will appeal to emerging natural capital markets.”

Getting started

- **Lead farmer** – a well-connected communicator with good green credentials becomes the steering member and gets the ball rolling.
- **Invites neighbours** – uses networks and relationships to recruit local farmer membership and spread the word.
- **Decide aims** – discuss and agree issues as a group, including species loss, habitat requirement, watercourses, other targets and outreach activity.
- **Choose facilitator** – recruit the right person to administrate, seek funding, organise events and co-ordinate training requirements.
- **Get funding** – investigate sources of funding, including the Facilitation Fund in Countryside Stewardship, independent funding options such as water companies, charities and sponsorship, and natural capital markets.

requirements. The aim is to identify any sources of pollution along the river so weekly water samples will be taken at 17 sites. Less frequent measurements of sediment from drainpipes are also recorded.

“At this stage, we don’t know what we will find out,” Ed says. “As well as various farm types in the catchment, there are also some old water treatment works that haven’t had any recent investment. When we do find out if any of them are polluting the river, or causing degradation, we will know what can be done to prevent it.” If the initiative is successful for the Wyllye Valley Farmers Cluster Group, it is likely to be rolled out in a conservation plan for the entire river, he adds.

The other priority habitat, chalk downland, largely comprises steep, grassy banks. A scarce habitat nationally, it is home to a huge number of plant species and increasingly rare invertebrates and butterflies. With expert guidance from Plantlife, JM Stratton & Co is restoring some of this habitat. “We have already put some arable land into downland reversion, as it wasn’t productive and it was impractical to farm it,” says Ed. “We have also identified a couple of other sites that we hope to do the same with – we are currently investigating the best way of funding that.”

● **Ed Shuldham is one of 16 Transition Farmers providing updates as they adapt their business for life post-BPS. Find out how you can follow his journey on p5**

ENVIRONMENTAL FARMERS GROUP

JM Stratton & Co is also a member of the Environmental Farmers Group, founded in 2021 to link the various cluster groups in the area and provide a catchment-wide environmental solution. It will offer natural capital trading services based on the grain co-operative model, helping to support farm incomes as the Basic Payment Scheme is phased out.

While it is still early days, members get a small slice of every deal brokered by the group, says Ed, who believes that the advent of biodiversity net gain will see the pace accelerate and bring greater rewards for members. “There’s increasing interest from corporates and funds with ESG

[environmental, social and governance] projects,” he says. “Being part of the group means we will be able to realise the revenue potential of our land and get a fair return for delivering public goods and services.”

As the deals can be large and long-term, being represented by a single contact who understands the new trading markets has enormous benefit, he believes. “Carbon and biodiversity offsetting and trading are fast-moving areas that most farmers don’t have expertise in. If we act as a group, with the right representation, we are more likely to be part of the right deals, which bring appropriate rewards.”



PHOTOGRAPHY: KET SANG TAI/ADOBE STOCK, KIRSTY NADINE/ADOBE STOCK, KATHY HORNIBLOW, CHRIS LOFTY/ADOBE STOCK



Zero-grazing switch helps reduce dairy feed costs

A farming couple have saved 2p/litre in purchased feed costs since moving to zero grazing and maximising fresh grass intakes. **Rhian Price** reports

Transition Farmers Tom and Karen Halton, who milk 530 ProCross cows near Congleton, Cheshire, have always grazed low-yielding cows to improve milk from forage and lower feed costs. However, they admit it has been a struggle as the extreme seasons have played havoc with grass use. “Because it was so wet, we couldn’t graze early enough this season and then it got away from us, so we had to cut it,” admits Karen.

Improving milk from forage is one of the Haltons’ business pillars, but they admit it was a weakness. Determined to fix it, they reseeded the 16ha grazing platform with multispecies leys to improve drought tolerance during the summer and reduce nitrogen use. This was direct-drilled in April after first cut and slurry was applied immediately afterwards with a dribble bar. But the idea to zero-graze came about when Karen was loathe to turn the milkers out to graze in the recent hot spell.

TOTAL MIXED RATION (FRESHWEIGHT)

- 20kg fresh grass
- 13.5kg first-cut silage
- 1.2kg straw
- 4.1kg brewers’ grains
- 3.4kg home-made blend
- 11.5kg maize

“I didn’t want 38-litre cows walking up and down the concrete track in 30C heat, so we decided to consider looking again at zero grazing,” says Karen, who last employed this practice six years ago. “We had an old zero-grazer that put grass in a feed trailer, but not enough cows could feed around it and grass got hot,” explains Tom.

How it works

Having a forage box on demonstration convinced them the saving was worthwhile, so they invested in a second-hand Veenhuis forage wagon that cost £16,000. A front-mounted McHale mower is used to cut the grass. This doubles up for silage-making alongside a set of butterfly mowers.

The grazing platform is mown at 1pm to provide the cows with fresh grass for their 2pm feed. About 1ha is harvested, which is also enough for the morning feedout at 6am. Grass is spread out in a thin layer in the silage clamp to prevent it from heating. For the past three seasons, the couple have applied SmartGrass growth enhancer, but this year they could only get enough to do half. Therefore, first cut was taken off the grazing platform in two stages at the end of April and the beginning of May, which helped create a wedge so the grass was not ready for zero grazing all at once. They have already completed one round and are just about to

enter their third. Karen still measures the grazing platform once a week using a plate meter and records the results on the management app, AgriNet. The aim is to cut the grass before it surpasses 4,000kg/ha of dry matter (DM).

The fresh grass is mixed into the cow’s total mixed ration (TMR) using their BvL self-propelled mixer wagon. Cows are fed out of troughs which have been lined with parlour cladding to make it easier for them to be cleaned out each day, explains Tom.

Saving

Daily milk yields of 37.2kg have been maintained alongside constituents of 3.8% butterfat and 3.3% protein. Purchased feed costs have been lowered from £860/day to £585/day, taking them from 11.9p/litre to 9.9p/litre. This has been achieved through lowering the amount of concentrate feed rate to 0.29kg/litre by reducing blend and brewers’ grains and parlour nuts, says the Haltons’ cattle specialist, Stephanie Hurstfield from Feeding Solutions.

“We have achieved this by replacing 24% of the original TMR with fresh grass, with the view to increase this to nearer 29%.” Tom explains: “There is a cost to zero grazing, but there’s a bigger cost to making silage and we are not using as much maize in the ration. We don’t have to ted or buck rake and neither do we have the expense of clamping the silage.”



The farm has maintained daily milk yields of 37.2kg with 3.8% butterfat and 3.3% protein



Protein and energy losses from field to clamp can amount to as much as 15-20%, which means fresh grass is also much higher in nutritional value. Grass use is better too.

The couple have also lowered the amount of fertiliser applied to the grass platform in-between cuts from 148 to 111 units/ha since establishing the herbal leys. Alongside this, 37 units/ha of slurry is applied with a 3,000g slurry tanker and dribble bar the day after grass is cut.

Benefits of the system

Karen says with the summers getting hotter, zero grazing is a good way to drive forage intakes without compromising cow welfare. "I do not want the cows standing out in the field during the heat. We put fans in the low-yielding cow shed three years ago and the shed is nice and cool, and cows are not expending energy walking to paddocks when it is hot outside."

Tom says zero grazing also fits better with their high-input system. "You must do what you are interested in and what you can make work. "For us, zero grazing is the next best thing and I feel we can manage it well. It does take a while for you to get used to the management and you must do it for three to four weeks before you get consistency," he concedes.

Another benefit of zero grazing is that they can access land they couldn't graze with the cows. A mob of 60 in-calf heifers also runs on the platform to help manage growth. "We manage it so the heifers are given priority to graze on the platform and, if needed, we can zero-graze the silage platform because we won't need to make as much [silage] now," says Karen.

Improving home-grown forage

Every acre is cropped year round to maximise home-grown forage. "When you improve milk from forage you need more forage, so we will have to stitch in more vigorous leys," says Tom, who is already direct-drilling grass after maize and has moved away from ploughing maize ground. These practices helped lift yields to 59t/ha on average last year, he believes.

About 12ha of hybrid rye has been grown for the second consecutive year for dry cow forage.

FARM FACTS

Halton Farms

- 240ha, tenanted
- Milks 504 ProCross cows (Viking Holstein, VikingRed and Coopex Montbeliarde in a three-way rotation)
- Yields 11,700 litres at 3.8% butterfat and 3.3% protein
- Milks three times a day
- Supplies County Milk
- Sells 1,000 litres raw milk a week through farm vending machine for £1.40/litre

"It is low in phosphate, which means we don't have to chop as much straw, and it is very high yielding. Last season we grew 62t/ha," says Tom. Fast-growing Westerwold ryegrass will be sown after the hybrid rye, which will provide two cuts of grass – one in the autumn and one in the spring – before the fields are planted with maize.

Staff management

People are another key business pillar for the Haltons, alongside cow health and welfare. Karen used to work in recruitment and places a big focus on attracting new entrants. Nine of the farm's 10

employees do not have a farming background. The couple put this success down to the effort they put into opening their farm gate online and in person. As well as having a presence on social media platforms, they recently attracted 800 people to an Open Farm Sunday event. "A big driver for us is demonstrating agriculture in a positive way and showcasing the high levels of welfare we operate, as well as the career opportunities agriculture offers," says Karen.

While they are not immune to staff challenges, Karen says creating a good environment for the team to thrive is important. "We haven't had a herdsman for over a year, but everybody steps up. Having protocols in place is a massive part of it, as is respecting and valuing the staff you have." She says one of the best bits of advice she can give is not to put up with poor performers. "If you put up with bad apples, staff get disheartened. When you remove bad apples, productivity goes up, so I'm not afraid of removing people when they are not the right fit for my business." ■

● The Haltons are part of our Transition Farmers group, updating us as they adapt their business for life post BPS. Find out how you can follow the Haltons' journey on p5



Jack, Karen and Tom Halton

What to consider when replacing farm machinery

Understanding your farm's needs is key when investing in new kit. **Jonathan Riley** reports

Buying kit to switch to more sustainable systems, without first assessing its true cost and suitability, could waste thousands of pounds and damage land.

According to consultants and machinery experts, there are a rising number of cases where growers have bought equipment that is over-specified or too large for their farm's needs. In many of these cases, the equipment is returned to the dealer or sold on the second-hand market, at a huge depreciation cost to the business.

So why are so many farmers buying inappropriate equipment, and what are the key steps to take to buy the right machine to make a profit under a new regime? Adviser Strutt & Parker, equipment manufacturer Claydon and the AHDB offer some insights on common investment pitfalls, and give tips on how growers can spend wisely.

Pitfalls to avoid

Misuse of grants

Grants such as those from the Farming Equipment and Technology Fund provide funding for a proportion of the retail price of equipment. Used correctly, this can be hugely beneficial in reducing the capital outlay when upgrading to more efficient machinery and making otherwise out-of-reach equipment affordable, says Mike Bywater, southwest territory manager at Claydon.

But some have seen the grant system as a way of buying bigger, higher spec equipment than

their budget would otherwise have covered. Only later has it become apparent that the upgraded machine does not meet their needs, says AHDB knowledge exchange technical manager Harry Henderson. In addition, the list of qualifying equipment set out under the grant rules may not cover the right machine for the farm, meaning there is a degree of compromise.

The on-off, open-shut style of government grant funding is a further influencing factor. Funding is often competitive and application windows open for only short periods, adding pressure on farmers to make a decision.

Strutt & Parker's head of farming, Jonathan Armitage, says growers sometimes make a big investment decision because they are unsure whether the grant funding will be available for subsequent windows, or if it will be offered with



Kit needs to be the right size for your operation, not just the biggest available

less attractive conditions. Then, even with a discounted price, buying new may not always be the most cost-effective approach. Cheaper and more appropriate alternatives for a system may be available on the second-hand market.

Inaccurate costing

Consultants have found that most farmers and growers are making investments without know-

TYPICAL COSTS ACROSS A RANGE OF OPERATIONS

Operation	Machine	Cost
Ploughing	390hp, 7 furrow	£40/ha
	170hp, 5 furrow	£31.82/ha
Min-till drilling	234hp, 4m tine	£82.50/ha
	215hp, 6m tine	£32.50/ha
No-till drilling	210hp, 6m drill	£45.70/ha
Rolling	190hp, 12.4m	£16.10/ha
Potato de-stoning	135hp, trailed de-stoner	£166/ha
Potato bed-forming	150hp, bed-forming	£57.70/ha
Potato harvesting trailed	195hp, 2-row	£366/ha
Fertiliser spreading	124hp, 24m	£8.97/ha
Spraying trailed (inc tractor)	30m	£6.06/ha
Spraying self-propelled	36m	£10.98/ha
Grass mowing	4m fully mounted	£16.10/ha
Combining	2016, 9m header	£123/ha
	2016, 9m header	£123/ha
	2004, 6m header	£119/ha
Carting	234hp and 14t trailer	£96/hour
Materials handling	Telehandler	£37/hour

Costs include fuel, driver, depreciation and repairs. Source: AHDB

FUEL REQUIRED TO GROW WINTER WHEAT

System	Fuel (litres/ha)*
Plough and cultivation	100
Min-till	75
No-till	50
More than £150,000	25%

*Includes crop establishment, sprays, fertiliser, harvest, trailers and pushing up. The AHDB has worked out a range of likely costs based on prices in the late spring/early summer of 2023. These can be factored into calculations. Source: AHDB



Over-specified equipment

Higher spec is only beneficial to profit margins if it is useful. It is possible that new technology can generate higher returns by increasing yields or saving time and labour. It will be a worthwhile investment if it more than covers its costs. However, the lure of an extra electronic gadget can encourage a grower to part with more cash and yet that additional expense may not produce increased returns. Often, high-spec machines come with functions that are hardly used and, again, the grower pays for the depreciation on the investment.

Peer pressure

All too frequently decisions are swayed by branding, press reviews or social media videos of kit working in ideal conditions. It is naturally persuasive when a fellow farmer or grower can demonstrate amazing results with a piece of equipment.

But it is worth bearing in mind that the results for another soil type and system might be very different. Few people will post their disasters, poor decisions and financial losses, and they rarely confess to buying the wrong equipment, Harry suggests.

ing the specific costs of growing a tonne of a crop under their existing or proposed systems. This is a vital step and missing it out creates huge potential to spend beyond the farm's budget. There is no way of evaluating whether a new machine is too costly, both as an initial outlay and in terms of running expense, without knowing the margins available, says Jonathan.

Unsuitable soil

Not all land is suited to a no-till approach, and too often growers are investing in equipment without admitting that the trend towards low-disturbance systems is not achievable on their farms. Harry says it is important not to bow to peer pressure to move into a system that cannot work efficiently. From the outset, ask whether the soil is suitable for a min- or low-till setup.

A starting point is to assess the soil structure and condition, if it is not already known. The tried-and-trusted method of digging a pit to determine structure and identify drainage and compaction issues is still the best approach, advises Harry. Check the friability, worm count and topsoil and subsoil structure; all will dictate the likely success of a low-disturbance system.

A further consideration is labour. An effect of the current labour shortage is not just the availability of workers but the limited number of skilled operators, says Mike. In situations like this, technology in the cab can help. Some modern machines have been simplified to a point where the operator needs far less experience than ever before.

Buying bigger than necessary

There is a belief that a bigger machine is better because it can cover more ground, more quickly. But farmers often have too much spare capacity and AHDB assessments have found that machines such as seed drills can be 50% bigger

than the farm needs. It is the same for cultivations, spraying and harvest equipment, says Harry.

The thinking behind buying big is that it is useful to exploit gaps in bad weather and wrap up cultivations or drilling within a tighter time period. However, while a bigger machine may carry out the work faster, it will not be able to access land as early in the spring or after bad weather, Harry points out.

Likewise, in the autumn, a heavier machine will have to quit earlier or risk damaging soil. So access to land may well be limited where a smaller tractor and drill would have a longer season. Where they do work, they may still fail to bring an improvement in margins. For example, the extra horsepower needed to pull the new kit will use more fuel, adding to costs. It may also necessitate additional investment in more powerful tractors. Generally, larger machines will see a higher depreciation than their smaller counterparts and the brunt of that cost is borne by the farm.

Buying kit for a new system

Before investing in machinery and equipment to transition to a new system, farm managers should undertake a rigorous planning process. This should include a review of the long-term strategy, finances available, the individual farm characteristics, calculations of the size of equipment required, and the level of technical specifications.

Overall aims

The cost of new equipment is considerable, so it will have a long-term effect on the farm business. Regardless of whether the investment is to replace a worn-out machine or a fundamental switch to a new system, the first step is to look at the higher level strategy of the business, advises Jonathan. Where will it

DRILL SIZE REQUIREMENT BY OUTPUT		
Drill width	Average output (ha/day)*	
	Grain only	Grain and fertiliser
3m	21	18
4m	28	24
6m	42	35
9m	63	54

*Expected work rate for a 10-hour day. Average speed 10kph at 70% field efficiency, grain only. At 60% field efficiency, grain and fertiliser. Source: AHDB

< be in the next five years and what role will the investment make? Will it reduce labour dependency, improve animal welfare or perhaps change cultivations and cropping?

Review the existing situation

The first key step in putting together a purchase plan is to accurately assess the costs and margins of producing a tonne of crop under the current system. Volatility in input costs has been extreme over recent years, making calculations more difficult. The best approach is to review historic production costs, and compare them with yields of crops or livestock and the resulting margins. It is possible to make an estimate, but assumptions will have to be included over the potential for input price changes, says Jonathan.



CALCULATE THE SIZE OF IMPLEMENT REQUIRED FOR YOUR FARM

It is important to note that investing in a no-till drill that is unnecessarily big will wipe out the potential cost reductions from a switch to a more sustainable system, says Harry. The farm will have spent a lot of money to, at best, stand still. To avoid this and identify the correct scale of machinery, growers can carry out relatively simple calculations.

Step-by-step calculation process

1. How much area do you have to cover in the given time?
2. What timeframe do you have to complete the task? Use hours, so 20 days with a 10-hour working day = 200 hours.
3. What is the speed of operation? Use kilometres per hour (kph) and be realistic
4. What is the field efficiency? That is, out of 100% of the time spent in a field, what percentage of time is spent turning around and refilling or unloading? (See below.)

Field efficiency explained

Field efficiency figures show a range of work expected under practical conditions that should be added to the calculation.

- **Ploughing 65%**. Add 3-5% if average field size is greater than 10ha
- **Min-till cultivation 65%**. Add 3-5% if average field size is greater than 10ha; reduce by 5% if no GPS guidance
- **Drilling 55%**. Add 3-5% if average field size is greater than 10ha; reduce by 5% if no GPS guidance
- **Spraying 50%**. Add 3-5% if average field size is greater than 10ha; reduce by 3%

if no GPS guidance; increase if bowser used. Farm efficiency can be below 50% if travel time is included. Consider a bowser

- **Fertiliser spreading 60%**. Add 3-5% if average field size greater than 10ha; reduce by 3% if no GPS guidance
- **Combining 80%**. Add 3-5% if average field size is greater than 10ha; reduce by 10% if no GPS guidance; reduce if not unloading on the move.

Use equation

Plug the figures into this equation to identify the appropriate machinery size:

$$\text{ha/hour} \times 10 \\ \text{kph} \times \text{field efficiency}$$

Example: Crop sprayer

- Required machine width: 430ha to spray in 36 operating hours
- Average speed: 12kph at 70% field efficiency (therefore multiply by 0.7)
- Required coverage: 430ha divided by 36 hours

$$= 12\text{ha/hour spraying time}$$

Width needed

Plug into the equation:
 $12 \times 10 = 120$
 $12 \times 0.7 = 8.4$
 $120/8.4 = 14.28$

Rounded to 14m, therefore 18m sprayer required

Benchmarking is also helpful in the process. The AHDB's Farmbench service is available to all levy payers. The service provides access to production costs, by region and for the top, middle and lower thirds in performance terms.

For more detailed data, it is possible to join a benchmarking group that more closely matches a specific farm, allowing a clearer picture to be developed. The more specific costs of the business can then be added, and no stone must be left unturned during this part of the process. Fuel, seed, fertiliser, pesticide, labour, storage and machinery costs must all be included and then worked out to a cost per hectare.

Estimate costs of the new system

The next step is to work out what the new system will look like, with an honest appraisal of the costs of buying equipment and the savings possible under a switch to a longer rotation, low-soil-disturbance system. This will help point to likely margins and guide the machinery purchasing process to ensure a profit can still be made. Fuel costs associated with low-soil-disturbance systems can be considerably lower than those of conventional inversion setups.

Savings in fuel and labour time can also be made in a longer rotation by perhaps introducing grass leys to let, or a root crop that could be outsourced under contract to a specialist grower. Calculations should also factor in the longer rotation, which can relieve some of the time pressures on machinery traditionally associated with cereal growing.

Barley and wheat will usually be combined within a two- or three-week period on an individual farm. But this window of operation can be extended with a longer rotation. Including roots or beans lengthens both the harvesting and drilling windows, making it possible to get around the jobs with smaller equipment and a lower investment.



A no-till drill that is unnecessarily big will wipe out the potential cost reductions from a switch to a more sustainable system

TRANSITION FARMER: KIT SPEAKMAN

Arable farmer Kit Speakman tries to keep his machinery investments to a minimum. “We are not big enough at 685 acres to absorb the depreciation costs from a fleet of machines, so we contract out arable work,” says Kit. Land suitable for potato and sweetcorn growing is let, while combinable crops are grown on a stubble-to-stubble contract. “I pay for the inputs and the rest is down to the contractor. It means that labour costs are kept down, too.”

For the telehandler he owns, the aim is to minimise the impact of depreciation. “We keep the telehandler while it is in its warranty period and then part-exchange it every three years.” That means any problems are dealt with under warranty and a service and maintenance package means there is no burden on the farm, and its staff and downtime is minimised.

Purchase is made via three equal annual instalments, which keeps machinery costs consistent and helps with business planning. Recently, however, Kit has invested in a new muckspreader. Part of his strategy is to cut input costs, and a nearby source of chicken manure has reduced the amount of bought-in fertiliser. The spreader includes a built-in weigh scale adding greater precision to spreading muck on grassland. “Because we will use it to make collections as and when the need arises, it made sense, in this instance, to own the equipment.”

● Follow Kit Speakman and our other Transition Farmers as they adapt their business for the new environmental schemes and phase-out of the Basic Payment Scheme. Find out more on p5

Avoid depreciation

Depreciation costs are low, and almost nil in the current market. However, replacement cost is comparatively high; some would be shocked at replacement costs, so that must be factored in, says Harry.

Are you replacing too early? British farmers and growers often trade in machinery at 5,000-6,000 hours but well-maintained, modern equipment is capable of operating to 10,000 hours and beyond. There will be a point where the risk of breakdowns becomes unacceptably high and that is down to the individual farm situation. Growers should ask:

- Would hiring a machine be more economical for the hours it does?
- Would a contractor do a better job at the same cost?
- Would sharing a combine with a neighbour, which may deliver cheaper costs, be logistically possible?
- Buying second-hand rather than new is a cheaper option.

Research and advice

When looking for the right machine for a completely new system, Mike advises to consult widely. Ask neighbours and use social media to gauge opinions of how a machine works in real-farm conditions. “At Claydon, advisers will help guide buyers through the entire process. It’s not an overnight decision, so we recognise the value of consultation and communication through a major purchasing process”, he says.

Claydon will organise on-farm demonstrations and follow-up visits after purchase. These are important because it is often only when a machine is in the work situation that its suitability for the new system can be appreciated, Mike stresses. ■



MACHINERY COSTS: WHAT MAKES THE TOP 25% DIFFERENT?

The AHDB and Strutt & Parker carried out a review of machinery costs across 18 Monitor Farms from Cornwall to Moray.

achieved by farms carrying out contract work. On average, the top 25% were putting 900 hours/year on their owned tractors.

1 Low depreciation
Depreciation is the largest cost in running a machine at 33% of the total, followed by fuel at 26%. Of the top 25%, low depreciation a hectare was achieved in part by operating over a wider area and keeping machines longer. Residual values were kept high through regular maintenance.

4 Low diesel usage
As fuel is the second largest cost of running a machine (26%), the top 25% were all using less than 100 litres/ha.

2 Low repair costs
Low repair costs were not exclusive to farms running newer equipment. Farms with older machinery still achieved low repair costs through tactical hiring of key equipment or through employing experienced staff who could carry out basic maintenance and repair work.

5 Low cost of combining
The top 25% were generally covering more hectares per metre of combine header than the rest at 70ha on average. A 10m header was, therefore, cutting at least 700ha. The cheapest cost of combining was achieved by a 7.3m combine cutting 569ha (78ha/m of cutter bar).

3 Low machine costs
While low machine costs an hour are linked to depreciation, they were also

6 Size of farm
While there was no clear correlation between farm size and costs, the top 25% ranged from 500ha to 1,000ha in cropped area. Economies of scale prevented some smaller farms (under 350ha) from obtaining the lowest cost wheat production.

Transition farmer slashes carbon emissions



Transition Farmer Andy Bason provided an insight into his carbon-negative, Hampshire-based arable unit during a recent farm walk. **Jonathan Riley** reports

The Transition Farm Walk saw more than 80 visitors descend on 800ha Newhouse Farm, Alresford, to see how it captures 2,000t of carbon dioxide (CO₂e) a year – some 439t more than it emits.

Visitors included local farmers and *Farmers Weekly* Transition partners. They heard how the farm's forestry, biomass boilers and switch to low-till cultivations have helped slash greenhouse gas emissions.

Average diesel usage has been reduced by 40% from 82 litres/ha to 50 litres/ha. The farm is continuing to capture even more carbon, having planted 20,000 deciduous trees on 10ha of less productive farmland using a Forestry Commission English Woodland Creation Offer.

Local farmer Rob Singleton wanted to know how much carbon the plantation could sequester in the future. An estimate of 350t CO₂e/ha was suggested by Alex MacKinnon of the Carbon Store.

Further trees have been planted as an agroforestry venture within an arable field. About 400 pear, walnut and apple whips, planted in 4m-wide strips, run north-south, 30m apart through a winter wheat crop.

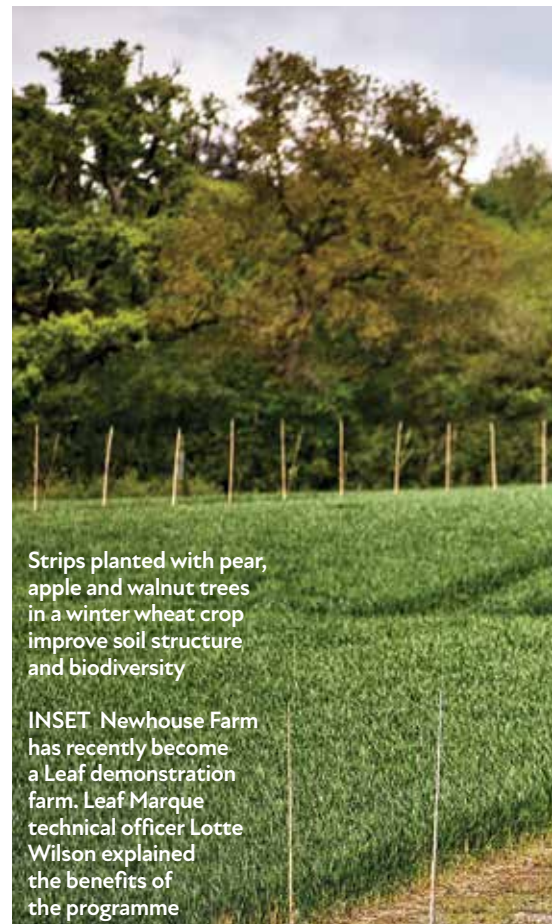
As well as capturing carbon and improving soil structure, tree roots yield nutrients for the growing crop. The long-term goal could see fruit harvested by the local community with the rest sold commercially.

Last year, some 1,700 people visited the farm for events such as Leaf's Open Farm Sunday.



Having become a Leaf demonstration farm last year, the farm is now undergoing Leaf Marque certification, explains Leaf Marque technical officer Lotte Wilson.

As a Leaf member, Newhouse Farm is able to benchmark its performance against more than 1,000 other farmers and growers. It can also take part in knowledge exchange initiatives with 40 other demonstration farms. ■



Strips planted with pear, apple and walnut trees in a winter wheat crop improve soil structure and biodiversity

INSET Newhouse Farm has recently become a Leaf demonstration farm. Leaf Marque technical officer Lotte Wilson explained the benefits of the programme



LEFT Farm walk visitors heard first-hand about Andy Bason's Transition strategy



Farmers Weekly Transition project editor Johann Tasker kicked off the farm walk with an introduction



ABOVE One of 20,000 trees planted last autumn and winter

BELOW Visitors were able to travel around the 800ha farm in style



ABOUT THE FARM WALKS

The Transition Farm Walks bring together farmers and other supply chain members to see how progress is being made towards a more sustainable farming future. For more details on the farm walks, see fwi.co.uk/transition.

Host farmer Andy Bason is one of 16 Transition Farmers providing updates as they adapt for the new environmental schemes – see p5.



Solar is a popular option but can encounter planning hurdles

Experts outline on-farm renewable energy options

What are the opportunities and potential pitfalls of investing in renewable energy? **Ruth Wills** highlights expert views at a recent Transition webinar

Renewable energy has become a popular on-farm solution for cutting emissions and reducing bills from mainstream suppliers. So what are the options for renewable energy use on farm?

In the most recent *Farmers Weekly* webinar, experts explored the opportunities available.

Solar

Mounting solar panels on buildings is something most farmers will have considered – but planning can create challenges.

Larry Irwin, renewables team senior associate director at Strutt & Parker, explained what planners consider when they received an application.

“We would look at the General Permitted Development Order; the triggers for planning include the roof type, general projection over the roof edge, and the type of building it’s being put on,” he said. “In terms of capacity, the limit for a non-commercial scale, which wouldn’t require planning, is one megawatt [1MW]. If you are unsure, speak to the local authority.”

John Wadeson, renewable project specialist at AF Group, was asked whether it was worth installing battery storage at the same time. “If there’s no usage on site and it’s being entirely exported back to the grid, then battery storage could be used to change the discharge timing to get better benefits and payments,” John suggested.

Battery longevity must also be considered. Tim Foster, head of energy services at Conrad

Energy, said: “The bigger sites should be operational for 20 to 30 years – most warranties for the batteries are 10 years. For smaller schemes, warranties are typically five to seven years – but check the small print, ask about the warranty agreement and consider the financial strength of the supplier – make sure there will be backup for the length of the warranty,” he advised.

In terms of financing, banks will generally lend within the length of the warranty period. “For a 10-year battery we would look at a seven-year term; for a seven-year battery we would be looking at a five-year term,” said Richard Pretty, head of complex transactions at Lloyds Bank Asset Finance.

Anaerobic digestion

Anaerobic digestion (AD) has been a popular option for large-scale farms in the UK – but the panel was asked if it could be done on a smaller scale. Tim said: “It depends if there is enough feedstock for the AD unit, and what is done with the gas that comes out of it. The simplest would be to get the gas back into the grid and then look at electricity generation.

“All farms are coming under pressure to decarbonise and show an environmental improvement. With the smaller AD systems, there is an argu-



ment for selling to the corporates looking for green gas,” he added.

Having the right person operating the plant is important. Richard warned: “It’s about how professional they are, and if they know what they’re doing. It’s costly if things go wrong.”

Wind

Currently, it is challenging to get an onshore wind project consented, according to Tim. “It is difficult to find a site with the resources, grid connection, and somewhere that won’t have local and national rejections to development,” he said.

Future

There are huge opportunities for power generation on farm. Tim said: “The existing coal power stations are being demolished, the UK is decarbonising and we’re still short of power. So there are lots of opportunities for power generation and how we make best use of it.” ■

WATCH THE WEBINAR

Watch the discussion in full at fwi.co.uk/transition, where you’ll also find the other webinars in the Transition series



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Editor Johann Tasker 07967 634971 • Project lead Anna Eccleston 07769 696074

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